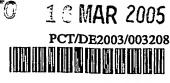
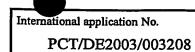
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### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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anternati	ONAL PRELIMINA	RY EXAMIN	ATION REPOR	•
	(PCT Article 36	and Rule 70)		
Applicant's or agent's file reference FIN 249 PCT	FOR FURTHER ACTION	ON See Notifi Preliminary	cation of Transn Examination Report	nittal of Internat
International application No. PCT/DE2003/003208	International filing date (a 26 September 2003		Priority date (day) 27 September	month/year) 2002 (27.09.20
International Patent Classification (IPC) or n G06F 17/50	ational classification and IP	C	<del>-</del>	
Applicant	INFINEON TECHNO	LOGIES AG		<del></del>
This international preliminary exam and is transmitted to the applicant action.	ination report has been prep scording to Article 36.	ared by this Interr	national Preliminary	Examining Authori
2. This REPORT consists of a total of	sheets, inc	uding this cover s	heet.	
This report is also accompani amended and are the basis for 70.16 and Section 607 of the	r this report and/or sheets co	ntaining rectifica	on, claims and/or dra tions made before	awings which have this Authority (see
These annexes consist of a to	tal of shee	s.	,	
3. This report contains indications rela	ting to the following items:			
I Basis of the report				
Priority				
III Non-establishment o	of opinion with regard to no	elty, inventive st	ep and industrial app	olicability
IV Lack of unity of inve	ention			
V Reasoned statement citations and explana	under Article 35(2) with reations supporting such state	ard to novelty, in	ventive step or indu	strial applicability;
VI Certain documents of	ited			
VII Certain defects in th	e international application			
VIII Certain observations	s on the international applica	tion		
Date of submission of the demand	Da	e of completion o	f this report	
26 April 2004 (26.04.2	2004)	23 No	vember 2004 (23	3.11.2004)
Name and mailing address of the IPEA/EP	Au	horized officer		
Facsimile No.	Te'	ephone No.		

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT



L.	Basis	of the re	report	
1.	With	regard to	to the elements of the international application:*	
		the inte	ternational application as originally filed	
l	$\boxtimes$	the des	scription:	
		pages	1-39	, as originally filed
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		pages	, filed with the letter of	
2.	CIAC I	e elemen	to the language, all the elements marked above were available or furnished to this Authonal application was filed, unless otherwise indicated under this item.  Into were available or furnished to this Authority in the following language  Inguage of a translation furnished for the purposes of international search (under Rule 23.1)	which is:
	$\sqcap$		nguage of publication of the international application (under Rule 48.3(b)).	(D)).
			nguage of the translation furnished for the purposes of international preliminary examinates	action fundam Dula 550 a. 11
,	MEAL	or 55.3	3).	
٦.	preli	illinary C	to any nucleotide and/or amino acid sequence disclosed in the international a examination was carried out on the basis of the sequence listing:  ned in the international application in written form.	pplication, the international
	H		ogether with the international application in computer readable form.	
	Ħ		ned subsequently to this Authority in written form.	
	Ħ		thed subsequently to this Authority in computer readable form.	
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		internat	tatement that the subsequently furnished written sequence listing does not go be ational application as filed has been furnished.	
	Ц	been fu	tatement that the information recorded in computer readable form is identical to the turnished.	written sequence listing has
4.		The am	nendments have resulted in the cancellation of:	
			the description, pages	
			the claims, Nos.	
		t	the drawings, sheets/fig	
5.		This rep beyond t	port has been established as if (some of) the amendments had not been made, since they the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**	have been considered to go
		icement si is report 10.17).	sheets which have been furnished to the receiving Office in response to an invitation und t as "originally filed" and are not annexed to this report since they do not contai	ler Article 14 are referred to in amendments (Rule 70.16
		•	ent sheet containing such amendments must be referred to under item 1 and annexed to th	is report
			and anticores to the	······································

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2003/003208

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability						
1. The indus	questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be trially applicable have not been examined in respect of:					
	the entire international application.					
	claims Nos 4-6, 13					
becau	ise:					
	the said international application, or the said claims Nos relate to the following subject matter which does not require an international preliminary examination (specify):					
$\boxtimes$	the description, claims or drawings (indicate particular elements below) or said claims Nos. 4-6, 13 are so unclear that no meaningful opinion could be formed (specify):					
i						
	the claims, or said claims Nos are so inadequately supported by the description that no meaningful opinion could be formed.					
	no international search report has been established for said claims Nos					
2. A mea	ningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid acceptations in the standard provided for in Annex C of the Administrative Instructions:					
	the written form has not been furnished or does not comply with the standard.					
	the computer readable form has not been furnished or does not comply with the standard.					

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III.

The application does not meet the requirements of PCT Article 6 because claims 4-6 and 13 are not clear.

- Claims 4-6 attempt to define a product by the method used to produce it, but it is unclear in what technical features the product so produced differs from one produced by a conventional method and what technical effect these features have.
- Claim 13 describes a method of downloading a program corresponding to claims 7-9. It is unclear in what technical features the method differs from conventional download methods and what technical effect is produced thereby.

7.	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
	citations and explanations supporting such statement

Statement			
Novelty (N)	Claims	1-3, 7-12	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-3, 7-12	NO
Industrial applicability (IA)	Claims	1-3, 7-12	YES
	Claims		NO

2. Citations and explanations

7

This report refers to the following documents:

- D1: US-B-6 405 357 B1 (CHAO TE TSUNG ET AL.) 11 June 2002 (2002-06-11)
- D2: US-B-6 357 036 B1 (MARTINEZ III MARCELLO R ET AL.) 12 March 2002 (2002-03-12)
- D3: US-A-5 331 572 (TAKAHASHI NAOYA) 19 July 1994 (1994-07-19)
- D4: US-A-5 498 767 (CASTRO JAMES J ET AL.) 12 March 1996 (1996-03-12)
- D5: US-A-5 608 638 (TAIN ALEXANDER C ET AL.) 4 March 1997 (1997-03-04).

The following document was not cited in the international search report. A copy was appended to the written opinion of 29.09.2004.

D6: US-A-5 828 116 (Ao) 27 October 1998 (1998-10-27).

Novelty, Inventive Step

The solution proposed in claim 1 of the present application is not inventive (PCT Article 33(3)) for the following reasons:

Document D1, which is considered the closest prior art, discloses (following as much as possible the formulations used in claim 1 of the present application, the references in parentheses relating to document D1)

- a method of determining the arrangement of bonding pads on the active top side of a semiconductor chip disposed in or on a package (abstract: positioning bond pads), the method being carried out on a computer system and having the following steps:
- a) inputting into the computer system
  semiconductor chip data that have geometric
  properties of the semiconductor chip as well as
  information about the number of bond pads to be
  arranged at each edge of the semiconductor chip
  (implicit it is obvious that for the following;
  steps, especially for step f), the requisite
  data of files, terminals and the like must be
  input and converted into an electronic image of
  the component),
- b) inputting into the computer system bond pad data that have geometric and electric properties of the bond pads to be arranged on the active top side of the semiconductor chip (implicit),
- c) inputting into the computer system package
  data that have the geometric and electrical
  properties of the package as well as of the bond
  terminal faces to be arranged on the top side of
  the package (implicit),

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- d) inputting into the computer system production data that stipulate the arrangement of the semiconductor chip in relation to the package (implicit),
- e) generating from the data input in steps a) to
  d) an image of an electronic component that
  comprises the package and the semiconductor chip
  arranged with its passive rear side on the top
  side of the package (implicit),
- f) arranging the bond pads in the image of the electronic component in edge regions on the active top side of the semiconductor chip so as
- (f1) to provide equal spacing between adjacent bond pads or between the outermost bond pads per semiconductor chip edge and the neighboring semiconductor chip edges (column 1, lines 20-26 "constant pad pitch", column 4, lines 15-22 "Corner Gap").

The subject matter of claim 1 differs therefrom in

- (f2) further alternatives to (f1) in step f) and
- g) providing bond pad arrangement data that have information about the arrangement, as per step f), of the bond pads on the active top side of the semiconductor chip, for subsequent processes of producing and/or designing the semiconductor chip and/or the package and/or the electronic component.

Steps (f1) and (f2) are alternative embodiments linked with "or". That means that an argument that denies an inventive step with *one* of the two embodiments of claim 1 is sufficient to deny it for the entire claim 1. The following examination is

therefore done separately for variants (f1) and (f2), starting with (f1).

The problem to be solved with the present invention can be seen as that of integrating the step of arranging the bond pads in subsequent steps.

A person skilled in the art is aware that in virtually all fields today a thorough integration of design and production is sought. It is, then, obvious that to realize the integration the bond pad arrangement data generated in step f) must be passed on for further processes of production and/or design of the chip, the package and the component (see, for example, D2, abstract: "extracts bond pad location data", "generates a bonding diagram for the semiconductor assembly"; D5, column 4, line 66 to column 5, line 34: "build sheet used during manufacturing", "connecting automatically the wires between the die pads and bond fingers to form a bonding device diagram").

Thus, a person skilled in the art, proceeding from D1 and charged with the task of thoroughly integrating design and manufacture, would arrive at the method described in claim 1 without an inventive step.

### N.b. (variant 2):

Claim 1 is not inventive even if the alternative described in variant (f1) is replaced by one of variant (f2).

The alternatives sketched in (f2) are straightforward applications of known arrangement

275

methods for bond pads that can be combined as required (e.g. depending on the bonding methods and machinery used) and result in no surprising effects.

For ultrasonic bonding a person skilled in the art would select, for example, the radial arrangement shown in D6 (fig. 1; column 3, lines 61-63 "The wires 35 through 44 are all extended radially from the center of the sensor chip"), but for minimal bond lengths, the shortest distance between bond pads and bond terminals, shown as prior art in D6 (fig. 17), while in practice often compromising between the alternatives. Thus the expert — depending on the situation — would arrive at the solutions described in (f1) and (f2) without an inventive step.

Claims 2 and 3 are not inventive (PCT Article 33(3)) because they are straightforward applications of integrated design and production. See in particular D2 (abstract: "determine whether all bonds are within established guidelines", "generates a bonding diagram", "the bonding utility may interfere with a semiconductor design circuit to generate a suggested fix to a impermissible bonding situation. One or more bonding pads may be moved", fig. 2) and D3 (abstract: "a layout near bonding pads may be moved", "the input/output blocks are arranged", "the input/output blocks and the pads are connected to each other through wiring lines", fig. 3, column 2, lines 13-44).

To a person skilled in the art it is obvious that the generated design and layout data are used for further steps such as bonding and photomasking. 3. Claims 7-12 are not inventive for the same reasons as for claims 1-3.